CHEMICAL & ENGINEERING NEWS

C&EN

JANUARY 3, 1994

U.S. CHEMICAL TRADE EXPERTS EXPRESS DOUBTS ABOUT GATT PACT PAGE 11

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ACS PRESIDENT

PAGE 2

CHEMICAL & ENGINEERING NEWS

C&EN

JANUARY 3, 1994

NEWS OF THE WEEK

■ A primitive DNA "retroelement" found and characterized by Ohio State researchers may be the ancestor of modern DNA-based organisms. **Page 5**

■ U.S.-Russia cooperation in science and technology has received another boost with the recent visit to Moscow of a high-level group led by Vice President Al Gore. **Page 6**

■ American Cyanamid has completed the spin-off of its Cytec Industries subsidiary, which encompasses essentially all of Cyanamid's specialty and commodity chemical operations. **Page 6**

■ University of California, San Diego, scientists have developed a method for dendritic growth of conducting polymers between platinum wires. **Page 7**

■ Crypt of St. Mark's Basilica in Venice has been restored, largely through materials and financial help from France's Rhône-Poulenc, after being walled up for 400 years because of flooding. **Page 8**

■ DuPont will continue to produce chlorofluorocarbons through 1995 at the request of EPA, even though the company had planned to halt their production by the end of this year. **Page 8**

COVER: Photo by George W. Baker, Christmas City Photography Studio

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BUSINESS

Massive global overcapacity continues to dampen the outlook for titanium dioxide, although the market for the ubiquitous white pigment probably will grow a little this year. **Page 14**

Dow Plastics sees moderate growth in sales this year, a bit ahead of that for the overall plastics industry in the U.S. **Page 15**

How to succeed at joint ventures in Eastern Europe is the subject of a handbook published in London and sponsored by the Confederation of British Industry. **Page 16**

GOVERNMENT

NIH director Harold E. Varmus talks about the importance of basic research, the selection process for funding of research proposals, and the external political climate. **Page 18**

SCIENCE/TECHNOLOGY

Design and synthesis of a hollow, spherical dimeric complex that self-assembles via hydrogen bonding marks the birth of a new family of supramolecular complexes. **Page 23**

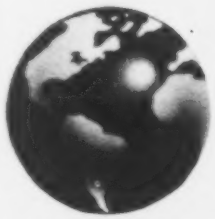
Chemists have produced "sea urchins"—structures in which single-layer carbon nanotubes radiate in three dimensions from gadolinium-carbon cores. **Page 24**

Carlyle Storm replaces Alexander Cruickshank as director of the Gordon Research Conferences and faces the challenge of the declining proportion of industrial scientist participants. **Page 25**

BOOKS

Compass and gyroscope are metaphors for science and democracy in book that broaches the subject of sustainable development; author asks pointed questions, but omits crucial details. **Page 26**

TRADE AGREEMENT



Chemical industry still has concerns over the recent Uruguay round trade pact, particularly over the small number of countries participating in the chemical tariff cuts. **Page 11**

PRESIDENT'S MESSAGE 2
LETTERS 4
CONCENTRATES
Business 9
Government 17
Science/Technology 22
THE DEPARTMENTS
ACS Comment 28
People 28
Awards 31
Meetings 33
Newscripts 48

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LETTERS

Space station booster

This letter is in response to the one written by Robert J. Good, "Space station turkey" (C&EN, Nov. 29, page 4). I have been saying this so often that I sound like a broken record, but when I hear shortsighted opinions like the one expressed by Good, I cannot help but reply.

This country is in an economic crisis. Every week we read of another major corporation restructuring or downsizing and eliminating people including scientists, engineers, managers, and skilled tradespeople. The job market for recent college graduates (including chemists) is the worst that it has been in recent years. Furthermore, industry does not intend to rehire people when the economy improves. Industry has found that with automation it can produce the same amount of product with fewer workers, and it will do so. This is called increasing productivity.

This country needs the space station. It is necessary for the future of the space program, including the development and exploration of the Moon. Space is the big industry that will supply jobs for the future generation of Americans. The time to act is now. The Russians are ready to cooperate and participate (C&EN, Nov. 22, page 29). We should not let this opportunity slip by. This is the dawn of the 21st century. Space is our future. All scientists should support it.

Donald L. Miller
Midland, Mich.

Rockne was no chemist

In your Sept. 6 issue (page 35), you have a meeting brief entitled, "Famous football coach [Knute Rockne] also had chemistry career," and you quote a paper by James F. O'Brien as your source.

I recently wrote a book, "Shake Down the Thunder: The Creation of Notre Dame Football" (Henry Holt & Co., New York, N.Y.) based in large part on Rockne's daily correspondence, which I found, by chance, in a subbasement of the Notre Dame library. In that book, I debunk the myth—promulgated by the Hollywood film "Knute Rockne—All-American"—that the coach could have been a great chemist. In fact, Rockne briefly taught high school chemistry in Notre Dame's prep school because the administrators of the time did not believe that he had enough to do coaching football and track—his main preoccupations. Then, because of the shortage of teachers during World War I, he briefly taught in the university division.

Rockne's name was kept in the university bulletin as a chemistry teacher until 1922 because, through vanity and his clout as a football coach, he insisted on it. In addition, the claim that, in the 1920s, Columbia University and Ohio State University offered him positions in chemistry is based on a number of casual biographies and articles about the coach by journalists who offered no footnotes or factual evidence for these or any other assertions in their works. However, in my book, I carefully document the Rockne-as-chemist myth, and I base my refutations on the coach's private papers as well as the papers of the Notre Dame administrators of the time.

Knute Rockne always wanted to be a football coach and, in many ways, was the first big-time college coach. His connection to chemistry was about as close, to quote Thorstein Veblen, as bullfighting is to agriculture.

Murray Sperber
Associate Professor of English and American Studies, Indiana University, Bloomington

Low voter turnout

As an emeritus member of ACS, I was appalled, shocked, and dismayed by the low voter turnout in the ACS presidential election (C&EN, Nov. 22, page 6). Of 145,000 ACS members, only 26,323 (less than 19%) took the time to vote for the leader who will direct our society for the coming years.

Don't you members have enough interest to take a few minutes to review the biographies and candidates' statements and then spend 29 cents for a stamp to make yourself heard in your own society? For the price, you couldn't get a better bargain.

Even though retired as a working chemist for the past 10 years, I still believe that we, as members, should all exercise our franchise.

Bernard M. Balnk
Flushing, N.Y.

1994 dues bill

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Global overcapacity holds back titanium dioxide

After a tumultuous 18 months beginning in the second half of 1992, the global market for titanium dioxide (TiO_2) has calmed down some, and the outlook is for a little growth in 1994. That is the year-end assessment of the market for the ubiquitous white pigment, according to Dennis H. Reilley, vice president and general manager for white pigments at DuPont.

Speaking at a briefing last month in London, Reilley pointed out that the major problem for the industry is massive global overcapacity. Current capacity for TiO_2 is about 3.5 million metric tons per year, whereas annual demand is about 3.0 million metric tons. Demand was up 0.5% in 1993 from the previous year.

Prices are so low that, by DuPont's analysis, roughly half the capacity around the world is being operated at a loss. Prices are at too low a level to justify investment, Reilley said. And although new investment is not needed now, he said, when the recession that has been hampering world economies does end and growth in demand for TiO_2 picks up, "the next shortage is not a question of 'if,' but 'when.'

"The difficult part to predict is when pigment demand will pick up," he pointed out. "When you come out of recession, there is strong demand—as much as 10%—but more generally 6 to 7% per year for a couple of years. That is consistent with history. If 1994 or 1995 is the beginning of that upturn, we will see supply and demand balance back in by about 1996 or 1997." And, by implication from DuPont's figures, if demand continues to grow—while some existing capacity is shut down and no investment replaces it—the industry will see shortages by the end of the decade.

Almost all of the new capacity for the pigment brought on stream in the past two years has used a chloride process; all of the capacity that was shut down has been sulfate process. The result has been a net reduction in capacity worldwide. And, said Reilley, "nothing indicates that this trend is going to stop."

DuPont claims the largest share of the world's TiO_2 market, with 24% of capacity. According to DuPont's estimates, Tioxide, part of ICI (U.K.), is second largest with 14%; followed by SCM Industrial (U.S.), part of Hanson plc, with 12%; Kronos (U.S.) at 11%; Kemira (Finland) with 7%; and Kerr-McGee (U.S.) and Ishihara (Japan), each with 5%.

DuPont does not produce in Europe, although it would like to. Last summer Kemira beat DuPont to the purchase of a chloride process plant in the Netherlands. To have capacity in Europe just to have capacity there, said DuPont officials, "is not in itself enough." But there also is the undeniable fact that five of the top 10 paint companies in the world are European based—a marketing consideration that has not been lost on DuPont.

On the other hand, the company is a major factor in the Asia-Pacific region, with what it says is an 18% share of the market, second only to Ishihara, the predominant supplier in Japan. In April, DuPont will start up in Taiwan a 60,000-metric-ton-per-year chloride-process plant. However, the company is not worried about oversupply in the region. "There is plenty of demand there," Reilley said. "We can rearrange our supply lines a bit. It is a high growth region."

The new unit in Taiwan is the last new plant construction project on the books. "Nobody sneaks up on you in this business—it's a five-year [time frame] from design to startup," Reilley said. A producer of the pigment could probably expand a plant in only about one or two years, he conceded, but "we probably won't see it: The problems have just been too rugged for the industry."

Patricia Layman

TiO_2 capacity shutdowns rise following 1991, 1992 additions

Thousands of metric tons	New capacity	Shutdowns
1991		
Savannah, Ga.	55[a]	
Bunbury, Australia	70[a]	35[b]
Kwinana, Australia	55[a]	
Burnie, Australia		20[b]
Stallingborough, U.K.		20[b]
NET CHANGE	+105	
1992		
De Lisle, Miss.	90[a]	
Ashtabula, Ohio	55[a]	
Lake Charles, La.	80[a]	
Malaysia	50[b]	
Saudi Arabia	50[a]	
Tracy, Quebec, Canada		25[b]
Varennes, Quebec, Canada		20[b]
NET CHANGE	+280	
1993		
Tracy, Quebec, Canada		20[b]
Grimsby, U.K.		35[b]
Antwerp, Belgium		15[b]
Furukawa, Japan		10[b]
NET CHANGE	–80	
1994–95[c]		
Taiwan	60[a]	
Europe		80[b]
Asia-Pacific		75[b]
NET CHANGE	–95	

a. Chloride process. b. Sulfate process. c. Planned.
Source: DuPont

Global trend to chloride-process TiO_2 continues

1985 TiO_2 capacity = 2.4 million metric tons

2000 TiO_2 capacity = 3.8 million metric tons

Source: DuPont